

# **Axioms as the Basis for All Understanding**

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## Introduction

Humankind has, from the earliest glimmerings of sentience on, endeavoured to answer certain questions. What time is dinner? *What's* for dinner? Who caught dinner?

Once these questions were being answered satisfactorily and moderately regularly for at least a fraction of the proto-human population, we can only imagine that in that warm lull that follows a full belly around a fire beneath the stars, questioning thoughts turned to less important, but nevertheless intriguing, issues. I wonder what those little bitty lights are up there? I wonder how the fire comes *out* of chunks of cold rock or rubbing sticks? I wonder if I'll get dinner tomorrow, or turn out to *be* dinner for something else?

Eventually, humankind developed rudimentary societies, and for the first time at least the ruling class of those societies experienced the luxury of not having enough to do. Others in those societies *didn't* have that luxury but wanted to. Together they conspired to extend these questions still further, so that they could spend their overabundance of leisure time working hard trying to answer questions that had little to do, at first glance, with dinner.

Their experiment was wildly successful. It turned out that even the hardest of workers had an early form of ``attention deficit disorder". We can speculate that their ready distractibility was an evolutionary advantage - it didn't do to become totally preoccupied with watching your prey in a world filled with *other* predators, or so engaged with your work at hand that you missed an opportunity for an easy meal. Also, even the hardest of workers in the hardest of times had *some* leisure, if only in that lull right after a big meal or when they were asleep.

It is only natural that right in the middle of a big hunt or while nursing a child or plowing a field, humans would suddenly stop, somewhat dazed, and wonder things like: Who am I? Why am I here? What *is* all this? Of course they had no time to think of *answers* to all of this, so the appearance of professionals that would try to answer them *for* them in exchange for food was a welcome relief.

The most profound of these is also the most unanswerable: Why Is There Being? (Also known as why are we here, where did all this come from, why is *God* there (if you believe in God and consider It the answer), why is *Physics* there (if you believe in Physics and consider It the answer)).

This question has infinity of possible answers, and over time we've cranked away at generating a tiny fraction of them for active consideration.

However, the task is fairly obviously doomed. In absolute terms the question *cannot be answered*. This is not because of the usual reason - that if we give any sort of an answer, the question can be repeated for the answer (ok, so the Universe is here because of the laws of physics, the laws of physics are there because of God, God is there because...).

The task is doomed at a *prior stage* in the cognitive reasoning process. It is doomed at the *epistemological* stage, by the nature of the word ``why" (or its many counterparts, where, what, who). It is *natural* for us to use these words as they have meaning and relevance in our daily lives. We feel like all questions should have answers, and when we look at them closely we find that certain questions, of certain kinds, *don't*. Here is one:

**Why should all questions (including this one) have answers?**

This is the kind of obnoxious question that parents eventually learn to answer (like all the rest of the related questions and question chains) with the simple word ``because...".

Which is, as any small child rapidly learns, code for ``this question cannot be answered". ``Because"

as an answer to a ``big" question often means that *it isn't a question at all*. At least, not one that we can answer in the same way that we can give somebody the time upon request.

Such a ``question" calls into question (sorry) the *foundation* of what we know, what it means to ask questions at all, and how we should cognitively interpret the answers (such as they are, if they exist). All of which leads us, by a roundabout way, to consider the issue of *axioms*.

# Axioms

## What is an axiom?

From Webster's Revised Unabridged Dictionary  
(1913) [web1913]:

Axiom, n.-- L. axioma, Gr.; that which is  
thought

worthy, that which is assumed, a basis of  
demonstration, a

principle, fr.; to think worthy, fr.; worthy,  
weighing as

much as; cf.; to lead, drive, also to weigh  
so much: cf F.

axiome. See Agent.

1. (Logic and Math.) A self-evident and  
necessary truth, or a

proposition whose truth is so evident as  
first sight that

no reasoning or demonstration can make it  
plainer; a

proposition which it is necessary to take  
for granted; as,

``The whole is greater than a part;'' ``A  
thing can not,

at the same time, be and not be.''

2. An established principle in some art or  
science, which,

though not a necessary truth, is  
universally received; as,

the axioms of political economy.

These definitions are the root of much Evil in the worlds of philosophy, religion, and political discourse. These two definitions are both universally taught (generally in the first form, generally in Euclidean Geometry that is the only serious math course that nearly all citizens in at least the United States are *required* to take). A relatively few students may move on and hear the term used in the second, ``wishful" sense (wishful in that by calling an established principle an ``axiom" one is generally trying to convince the listener that it is indeed a ``self-evident and necessary truth").

Alas, they are both *fundamentally incorrect* (although the second is closer than the first). When I say incorrect, I mean that they are *completely, formally, and technically incorrect*, not just a little bit wrong in detail. Neither of these is what an axiom is, *in mathematics* (from which *technical* usage the term's definition is derived).

This can best be illustrated by means of a simple example, well known to anyone who studies mathematics beyond the elementary level. Everybody (as noted above) learns the geometry of Euclid, as the archetypical Axiomatic System. One begins with the Axioms of plane geometry and proceeds to derive Theorems. Euclid (and his many overawed successors) did indeed hold the axioms

to be self-evident truths, although one should carefully note that the Latin root means ``*that which is assumed*'' and *not* ``that which is self-evidently known''.

Well then, what about *non*-Euclidean geometry?

As was long ago discovered, geometry on (say) the surface of a sphere is *not the same* as geometry on a plane. Unique parallel lines *always meet exactly twice*. Triangles have *more* than  $180^\circ$ , with  $180^\circ$  being a strict lower bound for ``small" triangles that lie approximately in a plane. That isn't to say that there *is no* geometry on the two-dimensional surfaces of spheres, or hyperboloids, or ellipsoids, or arbitrary amoeba-like-bloboids, only that it is *different* from geometry on the plane.

Different axioms, different theorems, different results, with all the axiomatic systems *equally empty* in terms of ``meaning".

This leads one to dangerous, convoluted reasoning. The axioms of mathematics themselves can become *variables* in a higher order application of mathematics. In some cases those axioms can be *quantified* (parametrically mapped into numbers) so that one can ``dial a theory" by selecting a set of numerical parameters. In others the axioms cannot be sensibly denumerated (numerated in an ordinal



sense with any sort of metric of ``closeness") and are unique, disjoint, random.

Worse, once mapped into numbers, the axioms themselves can become *self-referential*. One can write axioms and reason axiomatically to derive theorems *about* the axioms. Alas, as Gödel observed many years ago while working all of this out, the resulting mathematical systems can easily become *fundamentally conflicted*, with true but unprovable propositions and propositions that ``sound" like meaningful hypotheses which in fact cannot be proven true or false and somehow appear to be neither.

Why should questions (including this one) have answers? For any of a wide class of questions, especially including questions that might in any way direct or indirect refer to themselves (like this one) *they don't*. That is, it is perfectly possible to formulate expressions that *look* like questions, *sound* like questions, *fool the mind* into thinking that they are questions to the extent that all sorts of time and energy are expended attempting to answer them, but that *are not questions* (or more generally, hypotheses, propositions, other entities whose truth or falseness or relationships we might wish to explore).

Everybody is probably familiar with the old chestnut:

- The following statement is false.
- Was the preceding statement true?

(Reformulated as a ``question"). If you answer the question yes, it should have been no, which means that it should have been yes (ad infinitum) *if one orders the answer sequence in a temporal order*. Of course there is no reason to consider an answer and follow a sequential chain, especially in mathematics where logic should transcend sequence. This isn't a question, it is a pseudo question. It has no answer because it isn't a question. The answer isn't ``yes", or ``no", or ``because" - it is a great, rushing silence in response to a set of disjoint meaning fragments that, when integrated, have no meaning at all...

Unfortunately, *all propositions concerning the state of existence can be formulated as pseudo questions*.

Not necessarily self-referential ones - psuedoquestions can easily appear to reference external ideas like ``God" or ``reality". They are pseudo questions in the sense that they have *no derivable answer*. The only answers possible are then none at all or an *axiomatic* answer; and an axiomatic answer may or may not lead to a non-

conflicted, consistent, complete deductive system when combined with other axioms.

It is amusing before moving on to recall a couple of the many times pseudo questions like this have been used to destroy Evil Computers in books and movies. The Prisoner, for example, asking ``The General" the one word question ``Why?" The very question above causing an Evil Robot to melt down in the sequential cycle in the old television version of Lost in Space. Harlie (in Gerrold's When Harlie was One) concluding that all one needs to answer this sort of question is an infinite amount of time and awareness, as it sets out to perpetuate its own, greatly augmented, existence for that purpose.

Hah. Good Luck Harlie.

All of this digression is really only intended show that axioms, far from being ``self-evident truths" or even the gentler ``established principles" are, in both mathematics and derived usage in physics, science, philosophy and other disciplines nothing greater than *assumptions*. There is nothing more dangerous or powerful in the philosophical process than selecting one's axioms. There is nothing more useless than engaging in philosophical, religious, or social debate with another person whose axioms differ from one's own.

An axiom is at heart something that *cannot be proven*. It is something whose truth or falsehood *cannot even be addressed* (except, of course, in any of a variety pseudo questions and additional axiomatically derived answers that will soon have all the participants melting down in a puff of smoke or writing grants for the purpose of perpetuating existence while working out the ``answers"). An axiom is a *free choice*, a selection out of an infinite space of possibilities, upon the back of which we will *choose* to derive our system of so-called reasoning, dealing with contradictions and inconsistencies as best we can - or just ignoring them.

How to convince you of the *importance* of coming to a full, conscious realization of the truth of this observation in real human affairs? We have to take a journey of two parts. The first is through a historical exploration of fundamental axioms of The Cosmic All, with David Hume as our tour guide (accompanied by his two clowns, Descartes and Berkeley). The second is through a very much *current* exploration of genetic optimization, self-organized structure, and social geneto-memetics.

Yes, sorry, this may or may not be easy for you (depends, for example, on whether or not you are fully sentient or just pretending) but there is little alternative. If you've been paying attention and haven't already figured out where I'm going with

everything to the point where you are horribly bored, you should now be intellectually poised above a pit of existential despair.

I hate to leave you poised there (so I'll write on and possibly give you something a bit more comforting than existentialism at the end of it all). However, I equally well hate for you to be going ``huh" and scratching your head, when you are *supposed* to be poised and screaming at glimpse of philosophical Nothingness beneath, so permit me to get out the block and tackle and tie this rope around your feet - there, comfy now? Now we'll just swing you out over this pit, hold on to your loose change. There. Now look up - errr - down.

Note that *all the questions that you hold most dear* (no matter what they are) have just had their legs kicked out from under them - if *all* the fundamental questions are really *pseudo questions*, is it not the case that we can build little chains of sensible-sounding questions leading from any tiny question to one of the biggies? It is.

Ah, you begin to see the pit? Don't whimper too much, now. Consider:

How can we ask whether we should have a Reuben or a grilled cheese sandwich for lunch when we can't answer the pseudo question at the base of the whole question chain of why eat lunch in the first

place (to stay alive), why stay alive (because god wants me to, because I'm evolved want to), why did I evolve, why are there laws of physics, why is there a God? Psuedo questions. There is basically *no reason* to choose between Reuben, grilled cheese, or a hot shit on marble sandwich for lunch until we find a *pragmatic* way of dealing with this issue.

Note that a variety of smart-ass solipsistic answers work, but only if you are *already living* on the *bottom* of the pit of existential despair. After all, the solipsists get to choose whether or not to continue imagining that they're reading all of these words that they were clever enough to think up in third person. Surely they can imagine some way to make hot shit tasty.

The rest of us have no Good Reason for Doing Anything without *first* having a good reason for being, and right about there we run into trouble as *reason* and *being* in a single proposition is totally pseudo. Yet we generally *do* choose a sandwich, and that choice sometimes even works out well for us. We only get in trouble if we think too deeply about it and the waiter starts to fidget and look around longingly at his other tables. And of course there are days that you choose grilled cheese but the cook prepares grilled shit...

This is more than a bit of a shame; so much so that sensitive souls literally go mad over it. What is the suicide's standard apology? I have no reason for living. Surrounded by choice, a mentally ill person often has little to no free will. Confronted by an endless parade of choices big and small we make them, badly and well, for better or worse, yet *most* humans never work out *why* they do what they do from the beginning (the most fundamental of questions that underlie those decisions) to the end (the choice of lunch today). At best their choices work if not examined too closely or deeply, lest they fall into the Pit.

We should be able to do better.

This is why it is *important* for you to clearly recognize the True Nature of the most *fundamental* factors that you *do* use as the deepest basis of all of the casual decisions you make throughout the course of the day. Ultimately, they are founded on your *axioms*, both philosophical and mimetic. If your philosophical axioms include a belief in God, and your mimetic axioms include the particular interpretation of Leviticus that prohibits pastrami and provolone or bread made with milk in the same bite, well, the Reuben is out. If your personal axioms *also* include the laws of temporal continuity and causality (and hence, physics, biology, and all the rest), you might well conclude that hot shit on marble isn't likely to be either tasty or nutritious,

leaving you with grilled cheese. This decision would be even more soundly based (given these same axioms) if you both have memories of enjoying toasted cheese sandwiches past *and* are silly enough to believe that something as ephemeral as a memory has any bearing whatsoever on the Now.

We leave it as an exercise for the reader to work out how to resolve a set of axioms that includes God, Leviticus, temporal continuity and causality into a system of reasoning and decision making that doesn't have *too* many internal contradictions.

You may not agree, of course, but according to *my* axioms, the Truth Shall Make You Free. In particular, simply having the epiphinaic insight that axioms are ultimately both a matter of totally free choice (as in they are *neither* true *nor* self-evident in any sense of the word, and cannot even be judged for consistency or aesthetics without *more* axioms to tell you how to do so) *and* that most of the axioms you *do* have are very probably geneto-memetic social imprinting and not something you ``chose" at all (providing that we agree on enough axioms for us to be able to continue a discussion at that point) might just empower you to, perhaps for the first time in your axiomatically suppressed and conditioned existence, to *choose your axioms* as a matter of absolute, conscious, meta-reasoned choice.



I will, of course, offer up a set that I find particularly lovely and useful, and even moderately consistent (although Gödel teaches us not to take that horribly seriously). They come with a free shave and haircut, metaphorically speaking, as we sloppily adopt as an *aesthetic standard* (not really an axiom) a wee bit of the William of Ockham's single contribution to Western Thought. *Once accepted* these axioms can form the irrational basis for a reasonably rational view of the Universe, and can even provide at least some poetic meta-answers to some of the unanswerable pseudo questions, which is the best one can ever hope for.

In the meantime, I'll have the reuben on rye, chips on the side, with a frosty cold beer. Mmmmm. Don't worry, my axioms permit it. As long as I get enough exercise, so does my wife...

## **You Are Your Axioms: Robert Brown**

### **The Axiom of Open Mindedness:**

All axiomatic systems with any degree of complexity are likely self-referential, incomplete and inconsistent (including this one, as this axiom just referred to itself). I will therefore provisionally reject all Axioms or sets of Axioms (but this one) that claim completeness, overtly refer to themselves, or are explicitly and obviously inconsistent.

The provisional part is because (like any good jigsaw puzzle or crossword puzzle) one sometimes has to try different pieces in different places because an inconsistency *could* occur because a lot of the *existing* pieces are wrong, but the piece being tried is right.

## Why Logical Positivism (being Philosophy) is Bullshit

I'm actually sort of fond of logical positivism (LP). In a way, a large portion of this entire work is devoted to a process that *sounds* like an enormous crowd chanting ``L-P! L-P! All for none, and one for me!" Or worse, LP on steroids, LP with rabies, LP foaming at the mouth and writhing on the floor near your ankle.

Not exactly. You see, LP (taken at its face value and with its original and customary proposition) is an axiom that *cannot* be made consistent with *any* axiomatic system. For those who came in late or don't remember, LP appears to be the ultimate extension of Hume's empiricism; it incorporates the empirical process itself into the logical process of determining if any assertion is correct, any question is meaningful. It asserts that:

A statement is meaningful if and only if it can be proved true or false, at least in principle, by means of the experience<sup>5</sup>

Because of the fairly obvious connections with the scientific process, LP is a favorite proposition in science classes (especially those on quantum theory, as LP is at the very root of certain interpretations of quantum mechanics and in fact was first stated at very much the same time that quantum theory was

being invented and axiomatized). In science it is often expressed as the proposition that questions that cannot be empirically answered by means of a measurement or experiment *have no meaning*. Curiously, questions that are perfect reasonable ones in our classical experience such as "where is that baseball and how fast is it going" are by this criterion *meaningless* in quantum theory, where one isn't permitted to ask "where is that electron and how fast is it going".

The notion of *pseudoquestions* in the work above, things that might look like questions that can be answered, but really are just sounds, verbal constructs and their associated psychological perceptions that *resemble* questions grammatically, is clearly ripped off righteously from LP. There, however, the resemblance ends, particularly with respect to the question of meaning. Pseudoquestions are not *meaningless* - we all understand them perfectly well. We just cannot answer them by means of pure reason alone, and hence their answers will *always* be founded at some level on an unprovable belief, on an axiom.

Any attempt to establish empirical "proof" as a standard of ultimate knowledge both requires dozens of axioms to establish the basis for empirical proof itself and is inevitably self-referential and hence *by its own standard*, meaningless, as I will now proceed to show.

## Formal Proof that Logical Positivism is Wrong

- LP is a proposition (or can with little effort be formulated as either a proposition or question with identical semantic content).
- LP itself cannot be proven by means of experience. It is an *axiom*, one of many possible, equally unprovable assertions of ways to determine truth, falsehood, or meaning<sup>6</sup>.
- LP requires still more axioms to establish the criteria of experiential proof as a prior condition, and *they* cannot be proven experientially or otherwise *either* without begging the question..
- Therefore, LP is meaningless. I don't know what you mean when you say that meaning can only be ascertained by the possibility of an experiential proof as that statement has no possibility of an experiential proof.
- I understand what you mean anyway. So not only is LP meaningless, LP is *incorrect* as well.

This last conclusion is really quite obvious. LP is very lovely as long as you don't use it to define *meaning* in anything like the way it is used in English in everyday speech, but rather in a specialized sense, heavily dependent on axioms akin to those of not just science by quantum theory (*difficult* science). Everyone who is (still) reading this understands perfectly well what a proposition

like ``God exists" means, at least as well as they understand what the proposition ``A star exists that is outside the event horizon of my own perception"<sup>7</sup>.

So pseudoquestion propositions like these aren't necessarily *meaningless* (although there may be pseudoquestions that are) - in both of these cases a cognitive process of imagination can create an understanding of the non-null information content of the propositions, in both cases I can *imagine*, with greater or lesser clarity and fullness, what it would be to empirically validate either one (subject to the usual vast army of unprovable axioms required to empirically validate *anything*), and in neither case can an experiment to validate them actually be done. Or at least not one that I am quite prepared to undertake yet, in the case of the existence of God...

By this point you, dear reader, should easily be able to understand all of the reasoning above and even figure it out for yourself. The sad truth of the matter is that *nothing* can be *proven* by means of experience, as Hume observed about *two hundred years* before LP was invented. This, of course, means that making a proof by experience the heart of your philosophy is a really, really bad idea, unless you're doing it as some sort of cruel practical joke on generations of students and Academic Deans, or a bored philosopher down the hall from some quantum theorists and want to have some fun

stealing their *practical* concepts, stripping off all the unwritten axioms, and putting for the result as something new and different...(which is what I rather think is what happened).

As usual, Hume's result is perpetually and eternally *forgotten* by every school of philosophy that has erupted since his time. If it weren't forgotten, there would be no new schools of philosophy, of course - we could just accept the notion that we don't really ``know" anything but that which we are perceiving *now* and *can't* really know anything but what we are perceiving *now* plus whatever we *choose* to infer on the basis of our personal axioms, and spend our philosophical energies constructively in looking for a set of axioms we can all agree upon, in living with them, in playing all sorts of games inferred and deduced from them, *without* the impossible burden of having to ``prove" them right.

It's hard to blame poor Craig, poor Carnap, et. al. for LP, or to blame all the *rest* of the philosophers from the eighteenth century on who have tried to sweep Hume quietly under the rug. Philosophers have to eat too, after all. Still, it is the hope and intent of this work that once people come to really *understand* Hume and the Bullshit Nature of Rational Philosophy, they can start working on an *axiomatic* philosophy where we can replace the impossible notions of *logical necessity*, *proof*, and *completeness* with notions that really *are* derived

from and akin to the axioms of science: *degree of belief, consistency and esthetic sensibility*.

Empirical proof, even the wishy-washy kind permitted by the ``at least in principle" in the definition of LP above is ultimately founded in the *metaphysical* propositions known as the Axiom of Causality and all the rest. By connecting empiricism with knowledge, we conclude that we know Nothing.

Well hell, we already knew *that*...

On to more fun stuff about what we Don't Really Know.



## Conclusions

If I assert (as an axiom) that only I exist, and that the entire Universe exists only as a figment of my overheated dream-state imagination, a Matrix-like existence simulated for an audience of One, it is well known in philosophy that the resulting axiomatic system is logically unassailable. How can you prove me wrong? First of all, you are a figment of me, so only *I* can prove me wrong, but you can't because the Axiom is framed in such a way that it isn't falsifiable.

This sort of mindless philosophy (solepsism) is the kind of thing that makes ordinary people think of philosophers as jackasses. It was the sort of thing that Johnson was once cheered for ``disproving" (not really, of course, but who cares) in open debate. What is *really* wrong with it?

It is inconsistent. If I am the only thing that exists, and the Universe is My Oyster served on a figmental half-shell, then why cannot I be surrounded by beautiful houris who do nothing but peel me half-naked grapes (or peel me grapes, half-naked) at a whim? Why do I have to plod along typing this instead of just wishing the lines onto the page? You see, Solesism *alone* isn't a sufficient axiom. I need more. I need axioms to explain why I sometimes hurt, why my eyes are gradually failing as I age, why I *age*. I need axioms to explain why

my perceptions of what is nearby are so limited, but my perceptions of what is going on thousands of miles away through the glass teat of a television tube are crystal clear, complex, different, and correspond perfectly to what I see when I visit Paris, the Parthenon, India.

If all of this is a figment of ``my" imagination, then I've successfully managed to split myself into at least two incredibly separate beings - the artist that is constantly making up the story that I find myself embedded in, and the audience (the ``me" that is typing this on what appears to be a laptop computer obviously created by my artistic half). Since I *never perceive* the artist directly, how do I know that it is ``me"?

Indeed, consider the artist further. I run computer simulations of physical models as some of the research that I do in physics. In these simulations, I ``create" a virtual world of microscopic entities. Each is labelled with coordinates that specify the ``state" of my little mini-world. There are rules whereby they operate. Computer games played by my children are very similar, at a higher order. They hold a virtual terrain superimposed on their internal coordinates, and have many ``sprite"-based components and characters. Those characters, objects, devices all have independent programmed personalities, probabilistic behaviors, an underlying ``physics" of their interaction with each other and

their surroundings, and a ``plot" that unfolds as the game proceeds. I am not my computer models, the computer games are not my kids.

As they increase in complexity, to the point where a *whole world* is perfectly simulated with *perfect consistency*, the artist itself complexifies, its non-audience ``self" splitting up among all the virtual selves it creates. If all of these (you who are reading this, and your dogs and cats too) are really part of the artist, and the artist is equated with the audience, then Solepsism is isomorphic to *Pantheism*. We are all God, split into all that is. Somehow a Western Solepsist (driven to explain why he cannot bring a loved one back to life no matter how hard he tries) ends up an Eastern Hindu, accepting that Brahma split himself up to create the Universe (one fragment of which is him, all of which is still Brahma and eternal).

Ahh, but now you are wise and see the game I am playing with you. Axioms are neither true nor false, they just are. Logically there are many ways to convert one into another, adding an axiom here, altering an idea there, ultimately dividing by the zero that is their informational content and proving whatever you like. Axiom sets *can* be inconsistent. Axiom sets can be *consistent*, but they or the conclusions derived from them may not correspond to what we directly experience (and hence require

special axioms to resolve the conflicts, which are then over complex and ugly).

So choose your axioms wisely my friend, examine  
them often for leaks.  
Bail them out like a foundering float, burn the boat  
if it creaks.  
Challenge the cherished old words, my friend,  
challenge the new ones too.  
Avoid all beliefs that lead you to grief, and keep all  
the best ones for you.